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ERIC ROBINSON
PMB 955
21010 SOUTHBANK ST.
POTOMAC FALLS, VA 20165

EXAMINER	
PADGETT, MARIANNE L	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/070,908
Filing Date: May 04, 1998
Appellant(s): SAKAMA, MITSUNORI

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Eric J. Robinson
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/11/04.

(1) ***Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

(2) ***Related Appeals and Interferences***

Appellants state that they are aware of none.

(3) ***Status of Claims***

The statement of the status of the claims contained in the brief is correct.

(4) ***Status of Amendments After Final***

No amendment after final has been filed.

(5) ***Summary of Invention***

The summary of the invention is substantially correct, however with respect to the "end point of film formation" discussed on p.4 of the Brief, referring to p.22, ¶3-3 and p.30, ¶3-5, and Fig. 7, which is presumably directed at the "wherein..." clauses of the independent claims, it is noted that these disclosures directly relate maintaining flow rate with minimizing pressure change or as illustrated in Fig. 7 have 0.5 Torr for both H_2 and SiH_4 flows and presumably the transition between them maintaining given pressure.

(6) ***Issues***

The appellant's statement of the issues in the brief is substantially correct. The changes are as follows: Appellant has grouped all claims under the same prior art rejection A, when there were actually 3 separate variations made, and appellants used "and/or" with references that were only cited in the alternative. The correct 103 rejection were:

A.I. Claims 23-29, 45-50, 58-59, 61-65, 67-82, 84-87 and 89-129 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kozuka in view of Gupta et al (6,289,843 B1 and 5,456,796).

AII. Claims 60, 66, 83 and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kozuka, in view of Gupta et al (843B1 & 796) alone as applied above in claims 23-29, 45-50, 58-59, 61-65, 67-82, 84-87 and 89-129, <u>or</u> further in view of Mei et al., or Kaschmitter et al., or Yamazaki et al (076).

AIII. Claims 31-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kozuka, in view of Gupta et al (796 & 843B1) as applied to claims 23-29, 45-50 and 58-129 above, and further in view of Mei et al, or Kaschmitter et al, or Yamazaki et al (076).

(7) Grouping of Claims

Appellants state that all claims stand or fall together, hence the above error in statement of issues is minor, since all claims in issues AII or AIII are directed to dependant claims, so not relevant to the grouping.

There are 15 independent claims, and no one is exactly representative as the broadest of the group as a whole. Claims 26 will be taken as representative, with generic use of discharge gas (not involved in film formation) and then reactive gas used in forming a semiconductor film over a generic substrate.

It is noted that, claim 70 is analogous to 26, but with the intended use of fabricating thin film transistors in their preambles and does not necessarily prohibit the discharge gas from contributing to film formation. Claims 82 is substantially equivalently broad, but with generic discharge gas, generic reactive gas used to form an "under film" of nonspecific material, but

deposited on a substrate specified to be insulating. While the preambles are directed to thin film transistor fabrication, this is an intended use that is not necessitated by the claimed steps, hence is not considered to provide significant limitation to the claim.

Given the grouping that all these claims stand or fall together, it is concluded by the examiner that neither the specific deposit, nor the substrate it is deposited on are considered of patentable significance to the appellant, but that the question of patentability rest on the significance of maintaining the overall flow rate when changing from reactive gas to discharge gas, or visa versa.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

Claims 1-22, 30 and 51-57 are canceled.

(9) Prior Art of Record

5,420,044	KOZUKA	05-1995
6,289,843	GUPTA et al	09-2001
5,456,796	GUPTA et al	10-1995
5,366,926	MEI et al	11-1994
5,346,850	KASCHMITTER et al	09-1994
5,313,076	YAMAZAKI et al	05-1994
6,015,762	YAMAZAKI et al	01-2000
6,281,147 B1	YAMAZAKI et al	08-2001

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 23-29, 45-50, 58-59, 61-65, 67-82, 84-87 and 89-129 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kozuka in view of Gupta et al (6,289,843 B1 and 456,796).

Claims 60, 66 83 and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kozuka, in view of Gupta et al (843 B1 and 796) alone as applied to claims 23-29, 45-50, 58-59, 61-65, 67-82, 84-87 and 89-129, or above, and further in view of Mei et al (5,366,926), or Kaschmitter et al (5,346,859), or Yamazaki et al (5,313,076).

In these claims, it has been noted that the claimed invention is directed to plasma deposition of generic or of α-Si semiconductor, or of an insulating film, or an unspecified film (82, 87), not specifically to formation of thin film transistors (TFT). Claims 58, 64, 70, 76, 82, 87, 92 & 98 have the intended use in fabricating of TFT in the preambles, but have no necessary formation of such a configuration in the actually claimed steps of the processes. Deposition of 1 or 2 films does not make or necessitate a TFT. While they may eventually be used for TFT formation, there is no necessity that the films deposited ever reside in a TFT.

Kozuka teaches deposition of multiple layer non-monocrystalline semiconductor devices using both single and multi chamber processes, exemplified by deposition of amorphous silicon TFT (thin film transistors), by forming successive layers in a manner such that a plasma atmosphere is constantly maintained from the start until the end of the film formation process, in order to protect the interfaces from damage by initial stages of plasma formation and from contamination (Abstract), as is typically found in discontinuous plasma processes (col. 2, line 57-col. 3, line 7). This process inherently has the plasma stability aspects discussed by appellants in their response of 6/18/01 and again in the supplemental Brief (Summary, p. 4). In col. 4, lines 38-49, Kozuka particularly teach "since the plasma is continuously generated, the start and end of film formation can be achieved by changing the raw material gas. During film formation,

therefore, the raw material gas is preferably used, not singly but as a mixture with a diluting gas" (emphasis added). The diluting gas is exemplified by H_2 which differs from the present claims by preferably using H_2 with silane, except it is noted by the examiner that preferably does not mean its necessary, but that other options (e.g. singly) are possible, if not preferred. Also note that appellant's have unspecified "reactive gas" as the most generic option (expect claims 62, 68, 73, 79, 85, 90, 95 & 101), which does not exclude hydrogen with silane gas as the reactive gas, if it is separately supplied from the non-deposition hydrogen/discharge gas, which means use of reactive diluents (H is reducing, but not depositing) can read on claim language, however Kozuka show a single H_2 supply for each chamber of their multichamber system, so does not read on such an option. In col. 4, Kozuka further teaches, "With the use of such mixed gas, when the supply of the raw material gas is terminated after the completion of film formation, the discharge is maintained by the diluting gas so that the fluctuation in plasma can be suppressed..." Therefore, Kozuka's teachings can be considered to directly address concerns for plasma stability, since fluctuations would be a form of instability, i.e. instability is suppressed and stability enhanced as desired and taught by appellants. In col. 4, lines 50-62, Kozuka discuss control of gas supply paths and use of predetermined flow rate for achieving stable and responsive supply of gas, however there is no explicit discussion of maintaining the overall flow rate during the transition from reactive gas to just diluting gas, as is claimed.

Kozuka's Embodiment 1 (col. 5, lines 57-68+) indicates a process of keeping the pressure the same for the deposition plasma and H-plasmas. "The diluting gas can be hydrogen, argon or helium..." (col. 4). Embodiments 2 (col. 6, line 55-col. 9, line 12) and 3 (col. 9, line 15-col. 10, line 22), form plasma deposited amorphous Si TFT films using silane gas and H_2 as a diluents,

with the first deposition being plasma deposited Si_3N_4 insulating film, followed by films that read on claimed deposits. Reactant gas (SiH_4) flow is stopped in each plasma chamber and the diluents (discharge) gas plasma continues in that chamber before transfer to the next chamber, where the pressures are again kept the same (col. 8, lines 20-35) and the diluent gas plasma is present before reactive gas starts to flow into the chamber.

Kozuka differs from appellant's claims by explicitly inputting and using H_2 diluents gas during both depositing and non-deposition plasma in their examples; by stating a preference for the diluents gas (H_2 or Ar or He) to be mixed with the reactant gas; and not explicitly teaching the same flow rates for total gas flow during and before/after the deposition, or during the transition between diluents and active gas flow, while appellant's only explicitly use hydrogen gas or "discharge gas" (which is equivalent to Kozuka's diluents gas during their non-deposition plasma), either before or after the semiconductor or amorphous silicon containing deposition (or insulator or generic film) and teach all flow rates are the same, possibly 100sccm. From col. 4, line 50-62, it appears that the main reason the diluents gas is used with the reactant gas is so that only one gas flow needs to be turned off, and thus avoids problems if one's flow control equipment has slow response. This is consistent with the claim limitation to maintain overall flow rate during gas transitions, but does not anticipate it. The teachings of maintaining all the plasma at the same pressure is also consistent with the claimed maintenance of flow rate, since as would have been recognized by one of ordinary skill, that unless on also changes ones exhaust rate, inorder to maintain pressure as taught, one would need to maintain the overall input flow to maintain the same pressure. The examiner notes that flow/pressure maintenance might also keep

the reactive gas input site from accumulating particulates, which is well known to be beneficial to film quality.

It is seen in the teachings of Gupta et al. ((6,289,843 B1): abstract; fig. 2; col. 2, lines 48-58; col. 4, lines 40-50; col. 5, lines 5-57, especially lines 45-57; & (5,456,796): abstract; col. 2, lines 50-54; col. 3, lines 16-38; col. 5, lines 30-50; col. 6, line 61-col. 7, lines 20 and 35-40; and claims 9-11, especially col. 5, lines 39-42) that for an inert plasma gas, such as Ar or He, use for pre- or post-processing (deposition) plasma that prevents particle contamination of the substrate, that the inert gas may be stop simultaneous with start of the reactant gas, such that constant plasma is maintained and particle contamination prevented. For disclosure that discharge gas is <u>not</u> mixed with a reactive gas in Gupta et al (796), see col. 5, lines 31-50 and col. 6, lines 61-68; and in (843 B1), see col. 5, lines 5-15. Note that while indeed the Gupta et al references teach that only the dilutant/inert/plasma gas may be stopped, and also teach that the reactant gas may or may not be mixed therewith, this shows equivalent usage of the two options. While Gupta et al (796) does not discuss the pressure or flow used, constant plasma is consistent with constant pressure, and whether or not gas flow between steps is constant as will depend on pumping rate or efficiency. Containing analogous teachings to (796), Gupta et al (843 B1) explicitly discusses maintaining the rate of gas introduction, i.e. flow rate, substantially equal for inert gas and process gas, stating that "Maintaining such a uniform gas flow between step 220 [fig. 2, set & maintain inert gas pressure] and 230 [introduce reactant gases & stop inert gas] provides for a more uniform deposition". Given the teachings of Gupta et al (796) & (843 B1) which are taught to be generally applicable to plasma processes, including depositions and processes exemplified by using silicon containing gases, such as TEOS or for silicon oxide deposition, it therefore

would have been obvious to one of ordinary skill in the art, that the diluent gas of Kozuka (H_2 or Ar or He) need not have been mixed with the reactant gas, because (1) that mixing is stated as a preference not a necessity; (2) the mixing is not needed for the chemical reaction involved in the deposition as Kozuka teaches use of hydrogen or inert gases equivalently; (3) and either Gupta et al. shows that it is possible to achieve the objectives of Kozuka of preventing contamination and achieving a full or nonfluctuating (stable) plasma before introducing reactant gas, (i.e., equivalent to not having plasma on/off hysteresis) via switching from inert gas to reactant gas, instead of maintaining the inert or diluent gas flow throughout the sequence. Kozuka's teaching of using the same pressure would apply equally regardless of when diluent gases are used in order to maintain plasma and particle control. Gupta et al (843 B1) further provides both teaching and motivation to maintain uniform flow of gases between steps as is claimed, because the more uniform deposition taught to be produced by such procedures would have been desirable in Kozuka and consistent with Kozuka's maintenance of pressure, which would generally suggest maintenance of flow rate to one of ordinary skill. Obviously, if one's equipment has poor gas flow timing control, one would not use the modification from Gupta et al, but where sufficient response time &/or regulation abilities exist, one would have been further motivated by saving resources from wasteful or unneeded use, and fitting ones process to match ones apparatus' capabilities is a matter of competent workmanship. Furthermore, one of ordinary skill in the art would optimize their parameters in order to maintain the constant plasma or pressure as taught by the combination of references, such that depending on flow and pumping abilities of an apparatus, it would have been obvious to use the same total flow for both deposition and pre-or post-deposit plasma discharges as it is suggested by Gupta et al (843 B1)

and, as it would have been expected to produce the taught constant pressure if balanced by the pumping. Furthermore, choice of particular values of flow rates will depend on particular apparatus configurations, chemical reaction, pumping, etc., and would have been expected to have been optimized accordingly, via routine extermination.

Kozuka is teaching a stable plasma discussing its parameters in term of constant pressure. As previously note, these are related features and one of ordinary skill when knowing that the pressure is to be maintain but gases input changed, would have expected that this would involve control of flow rates, especially given the secondary reference Gupta et al (843 B1) teachings discussed above that "the total flow rate at which gases are introduced while RF power is being brought to full power is substantially equal to the total flow rate at which gases are introducded... to deposit" (col. 2, lines 54-58, etc.), which while not specifically mentioning the transition between the two gas inputs, would suggest to the competent workmen that one not create discontinuities in the flow rate at the gas change over (transition), which is consistent with maintaining the pressure throughout the process in Kozuka. The Gupta et al teachings are for bringing the plasma to full power before reactive gas input, which also suggest stable plasma via alternate word choice, so the aims in plasma control of plasma stability are analogous for the Kozuka and Gupta et al references, and for the present claims. The prior art combined for the rejection discuss intimately related parameters of flow and pressure for achieving like ends. While identical wording as used by appellants' claims is not found in the patents, no significantly different means or process of achieving the stability, or maintenance of pressure/gas flow is apparent to the examiner.

The timings for length of non-coating plasmas will depend on mechanical and electrical abilities of the particular plasma systems used i.e. how quickly the particular apparatus stabilizes, as well as production, line long directions, and would have been optimized therefore or determined by routine experimentation by the competent practitioner. Note Kozuka discusses TFT devices in general and the presence of a gate electrode on the substrate before deposition of Si_3N_4 and α-Si layers on col. 7, lines 45-55.

Kozuka teaches preparation of an α-Si TFT on a glass substrate (i.e. insulating), where initial plasma deposition of an insulating layer of silicon nitride followed by α-Si deposits is taught in embodiments 2, and as mentioned above Kozuka teaches maintaining plasma of the same pressure between deposits, and generally discusses the important of the interface between amorphous Si and insulating film (col. 3, lines 8-28), but does not specifically discuss silicon oxide as the insulating film, however as $Si0_2$ and Si_3N_4 are conventionally uses as equivalent alternative dielectrics in semiconductor devices, it would have been obvious to one of ordinary skill in that art to substitute one for the other in the teachings of Kozuka, and that the same needs for plasma stability, particle control, etc… would have been applicable regardless of specific insulating material or film composition. Note that while appellant claim the Si deposit, then the insulating film, there is no necessary order for their deposits, plus the teachings of either Kozuka or Gupta et al, make it clear that the intermediate non-deposition plasma is important regardless of the order of deposited materials.

Alternately for claims 60, 66, 83 and 88 any of the optional tertiary references show the use of silicon oxide layers as claimed. In Kaschmitter et al., see claims 20, 22 and 24; col. 4, line 49-col. 5, line 10 and col. 7, lines 25-27. In Yamazaki et al. (076), see abstract, col. 20, lines 15-

49, especially 35-39 where silicon oxide and silicon nitride are taught to be equivalently used, and claims 1, 5, 7, 9 and 14. In Mei et al., see abstract; col. 1, lines 44-49; col. 2, lines 33-66, especially lines 58-60; col. 3, lines 1-6, where SiO_2 is seen to be used before α-Si deposits in TFT device manufacture. Hence, use of silicon oxides as claimed, would have been an obvious alternative to Kozuka's taught silicon nitride as it has been shown to be a known equivalent alternative thereto in analogous processes and structures.

Claims 31-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kozuka in view of Gupta et al (796) & (843 B1), as applied to claims 23-29, 45-50 and 58-129 above, and further in view of Mei et al., or Kaschmitter et al., or Yamazaki et al (076).

These claims differs from the combination of Kozuka and Gupta et al references in requiring that the amorphous Si containing film be crystallized using laser light, however the references of Mei et al., Kaschmitter et al. and Yamazaki et al. already introduced above, show that it is old and well known to use lasers to induce crystallization in α-Si layers in TFT structures (Abstracts, previously cited sections, plus), hence it would have been obvious to one of ordinary skill in the art to further treat the structures produced in Kozuka, as combined with Gupta et al., as shown in any of these ternary references, because these conventional laser annealing techniques are shown to be desirable for TFT devices, hence expected to be desirable and effective for crystallizing the amorphous deposits of Kozuka for TFT end uses as generally suggested by the primary reference and described by the ternary references.

Claims 23-29, 45-50 and 58-129 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-63, or claims 1-5, 12-21 and 27-30 of U.S. Patent No. 6,281,147, or U.S. Patent No. 6,015,762, respectively, in view of Gupta et al (6,289,834), optionally considering Kozuka (5,420,044) discussed above.

Both patents and application have similar sequences of plasma steps using first gases and second gases, however the patents are directed towards ramping the voltage from the first plasma to a second higher voltage for use during the deposition plasma step. The application is mainly directed towards maintaining pressure or gas flow during and between the first and second (deposition) plasma steps. While both patents and application have claims to generic gases, when specified the patents' first gas is a reactive gas, such as oxygen, and the application's first gas may be a discharge gas which does not contribute to film formation, such as hydrogen, or be a reactant gas, as both orders are claimed.

Gupta et al. (843) also discusses a two stage plasma process, and uses pressure and gas flow maintenance as discussed above, plus teaches ramping the RF power between the first and second plasmas. The introduction of the full complement of reactive gases is delayed until full plasma power is reached, in order to reduce incomplete reactions that occur before the plasma is at full power. Gupta et al's first plasma may consist of non-reactive gases such as inert gases like helium, or it may be a combination of inert gases and one of the reactive gases such as oxygen, which itself will not cause deposition. See the abstract; col. 2, lines 13-25 and 38-58; col. 4, line 22 – col. 5, line 27 and lines 45-57. Given the teachings of Gupta et al., it would have been obvious to one of ordinary skill in the art to use both ramping of the plasma's power/voltage during the two step plasma, as well as maintenance of pressure and gas flow,

because both are seen to be important for creating stable plasma and thus producing good quality interfaces between film depositions, such as those involving silicon containing gases like tetraethoxysilane. Furthermore, while the present claims do not include ramping the voltage, neither do they exclude it, thus their more generic limitations on this subject are encompassed by the patent claims.

While Gupta et al. generally teaches the use of non-reactive gases in the first Stage of the plasma process, they do not specify that the non-reactive gas might be hydrogen as is claimed in some of the application claims. Hydrogen is well known for use as a carrier and discharge gas in plasmas, and forms no reaction products by itself, hence would have been an obvious option for the taught non-reactive gas, due to its conventional uses. Alternately, Kozuka as applied above has been seen to discuss two step plasmas with hydrogen gas used in the initial non-deposition plasma, hence it would have been further obvious to one of ordinary skill in the art that hydrogen would have been an appropriate first gas in the processes, particularly as generically claimed.

(11) Response to Argument

In appellant's argument section, discussion of Kozuka and Gupta (843 and 796) starts on p.8, first full paragraph, where it is alleged that the combination of these references do not recognize the importance of maintaining overall flow rate of discharge and reactive gases during a transition between them. This is disagreed with due to disclosure in those references as set forth above. Appellant's state that "Kozuka, Gupta '843 and Gupta '796 fail to expressly or impliedly suggest either supplying...where overall flow rate of gases supplied in the chambers is maintained..."(page 8, bottom 3rd), however Kozuka's change from only diluent to reactant

containing gas flows with taught control of flow and <u>maintenance</u> of pressure, is definitely and "implied" suggestion to one of ordinary skill, since to maintain pressure thought a plasma process where plasma gases are changed is intimately related to flow rate, since increasing or decreasing flow rate is known to respectively inherently increase or decrease pressure. Appellants' teachings in their Fig. 7 and cited portions of p.2 and p.30 of the specification even recognize the relationship between pressures and flow rate; hence their argument against the implications of Kozuka's teachings would appear to contradict their own specification.

Note that "maintaining" pressure means just what it says, hence when the gas inputs are changed there is neither a decrease nor increase in pressure, or it has not been <u>maintained</u>. Kozuka (or Gupta references) need not dwell on the transition period between the 2 types of plasma for the maintenance teaching to apply to it, especially as Kozuka's teachings on "stabilized" flow rates, and continuous plasma (col. 10) considered with the previous teachings of maintenance of the same pressure for thru various plasmas, with continuous RF discharge. Kozuka need not be discussing the issues of plasma stability and gas flow/pressure in the same words for the same concepts to be under consideration.

However, Kozuka is not considered alone, and the Gupta reference as discussed and combined above clearly show both the alternative of using diluent/discharge gases as in Kozuka either as claimed (separate from the reactant gas) or with the reactant gas mixture (as in Kozuka), with Gupta (843 B1) having explicit statement concerning maintaining uniform gas flow and the total flow rate of the initial plasma being equal to that of the deposition plasma (col. 2, lines 54-58 and col. 5, lines 45-57, etc. Hence, appellants' statement on p.11 of their 6/11/04 Brief concerning Gupta 843 is not understood, since Gupta's plasma is continuous and may change

gases in the same way as claimed. It appears that appellants are misreading or misconstruing the Gupta references in order to conclude that the combination of the rejection does not teach or suggest all the limitations.

The concept of "maintenance" of pressure in for all plasma types in Kozuka; or the gas input/flow teaching of Gupta (843), where uniform flow is maintained between initial plasma and that where reactant gas is added, while not explicitly mentioning the word "transition" or "change over" as appellant seems to conclude is required, clearly cover the concept as claimed, i.e. that gas parameter, specifically flow rate and its related pressure need to be kept constant for plasma stability and film quality. Semantics differences are not patentably significant, and maintenance as taught is inclusive of appellant's transition.

Appellant's distortion of the examiner's arguments on p.12 (2^{nd} half middle paragraph), which essentially says that the "official Action...Kozuka...apparently concludes that using the gas alone (singly) may be preferred" is incorrect. The examiner has NEVER made or attempted to say Kozuka teaches any such thing. There is a world of difference between saying Kozuka prefers reaction gas mixed with diluent, but does not <u>exclude</u> use of reactant gas by its self, and saying the possibility is a conclusion of preference. Appellant's further argument that a teaching of preference is necessarily a teaching against any use of the alternative is not agreed with, especially in light of the Gupta references that clearly show that either Kozuka's preference or appellants' claimed use of discharge or reactant gases are viable options both expected to be effective in plasma processes analogous to those of Kozuka, and that in either case the gas parameters such as flow rate in (843) are maintained between initial and deposition plasma. Appellant's arguments as continued on p.13 appear to be based on semantics arguments inorder

to say that the combination of references can not be considered to read on the flow rates during transitions as claimed by appellants.

The ternary references of Mei, Kaschmitter and Yamazaki (076) are directed to dependant claim limitations only and are not relevant to this discussion based on all claims standing or falling together.

Appellants' arguments concerning the obviousness double patenting rejection have not set forth any supported reason why the Gupta (843 B1) patent does not make the process of the present claims obvious in view of the claims of USPN 6,281,147 B1 or 6,015,762, which are also directed RF plasma using multiple gas inputs, such that Gupta (843) makes obvious a desirable technique maintaining total flow rate for changing those gases in analogous plasmas. Denying or ignoring the existence of quoted disclosure in Gupta (843 B1) is not convincing.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Marianne L Padgett

MARIANNE PADGETT
PRIMARY EXAMINER

Padgett/LR
October 5, 2004

Conferees
Shrive Beck
Glenn Caldarola

ERIC ROBINSON
PMB 955
21010 SOUTHBANK ST.
POTOMAC FALLS, VA 20165

Glenn Caldarola
Supervisory Patent Examiner
Technology Center 1700